

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Takashi Hirokawa, et al.

Serial No.: 10/543,039

Group Art Unit: 1616

Filed: February 14, 2006

Examiner: Chui, Mei Ping

For: AGRICULTURAL AND HORTICULTURAL WATER DISPERSIBLE GRANULE

DECLARATION UNDER 37 CFR §1.132

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Sir:

I, Yoshio Nakamura, hereby declare and state that:

1. I am a citizen of Japan, residing at 990-1 Hosoe Makinoharasshi Shizuokaken, Japan.
2. I am fully familiar with the subject matter of the U.S. patent application identified above as well as the references relied upon by the Examiner in the prosecution of this application.

3. I obtained a Master's degree from Konan University, Department of Natural Science, Chemistry, in March 1993.

4. I am currently employed by Nippon Soda Co., Ltd., and began working for Nippon Soda Co., Ltd., in April 1993, whereat I have engaged in research and development relating to process of preparing organic compound, and formulation of agrichemicals.

5. I conducted the following tests in order to ascertain effects of acylated amino acids in the presence of an agricultural chemical compound of which a melting point is more than 70°C and a carrier in terms of the underwater disintegrability and the dispersibility.

## METHODS

(Preparation of Samples 1 to 4)

a. 5 g of each composition of which components are shown in Table 1 was put in a mortar and then uniformly pulverized with a pestle.

b. Each pulverized composition put on the mortar with the pestle was placed on a measure and then the measure was reset to zero.

c. The pulverized composition was kneaded while adding water bit by bit until the pulverized composition was clayey

aggregated.

d. Each total mass of the clayey aggregated composition, the mortar, and the pestle, was measured using the measure, and the amount of the bound water used was calculated.

e. Each clayey aggregated composition was extruded from a screen (SUS board) with a bore diameter of 0.7 mm using the pestle (or a spatula) to obtain a vermicelli-like granulated particles.

f. The obtained granulated particles were air-dried on a tray until the surface thereof was dried, and then put in commercially available packs, usually to be used by being filled with tea-leaves, and dried using a fluidized-bed drier at 50°C for 30 minute.

g. The obtained granules were crushed in a dish using a spatula and then subjected to sieving to produce each water dispersible granule having a particle size of 177 to 1000  $\mu\text{m}$  as each sample 1~4.

Table 1.

Sample No. Components (% by mass)	1	2	3	4
PYRIBUTICARB (mp: 85.7~86.2° C)	30	30	30	30
AMISOFT HS-21 (disodium N-stearoyl-L-glutamate)	15	12		
AMISOFT CS-11 (sodium N-coconut oil fatty acid acyl-L-glutamate)	5	13		
VANILEX N (Partially-desulfonated sodium lignin sulfonate)			20	25
KUNILITE (Diatomaceous earth)	50	22.5	50	22.5
CARPLEX #1120		22.5		22.5
Total	100	100	100	100

(Disintegration test in water A)

250 ml of 53.6 ppm hard water based on official testing methods for agricultural chemicals was put in a 250 ml stoppered messcylinder, and was then left in a thermostatic water bath at 20° C. 500 mg of each of the samples 1 to 4 was added to the messcylinder, and the disintegrability thereof was evaluated in five grades as described in the specification. Results thereof are shown in Table 2.

(Disintegration test in water B)

250 ml of 53.6 ppm hard water based on official testing methods for agricultural chemicals was put in a 250 ml stoppered messcylinder, and was then left in a thermostatic water bath at 20° C. 500 mg of each of the samples 1 to 4 was added to the messcylinder. After one minute after that, the messcylinder was repeatedly turned over once per second, and the number of times required until the water dispersible granules of each sample was entirely disintegrated was measured. Results thereof are shown in Table 2.

(Suspensibility test 1)

After the above-mentioned disintegration test in water B was carried out, the messcylinder was turned over a further 20 times. 5 minutes after that, the amount of deposits was visually evaluated in three grades as described in the specification. Results thereof are shown in Table 2.

(Dispersibility test 1)

After the above-mentioned suspensibility test 1 was carried out, the messcylinder was turned over a further 2 to 3 times, and the existence of aggregate was checked using an optical microscope (400× magnification) to evaluate the state of the dispersion in three grades as described in the specification. Results thereof are shown in Table 2.

(Measurement of aqueous dispersion particle diameter)

After the above-mentioned dispersibility test 1 was carried out, the size ( $\mu\text{m}$ ) of the agglomerate was measured under the optical microscope (400 $\times$  magnification) at five points. Then, the obtained values were averaged. Results thereof are shown in Table 2.

(Observation of oil film forming)

After the above-mentioned suspensibility test 1 was carried out, the condition of the water surface of the dispersion was visually observed to check for the existence of formed oil film, and each sample was evaluated in terms of the formability of oil film in three grades as described in the specification. Results thereof are shown in Table 2.

(Observation of granulating property)

The formability of granulated particles was visually observed to evaluate in two grades as described in the specification. Results thereof are shown in Table 2.

## RESULTS

Table 2.

Sample No. Evaluation item	1	2	3	4
Amount of bound water (% by mass)	34	36	41	48
Disintegration test in water A	C	C	D	D
Disintegration test in water B	27	23	29	>30
Suspensibility test 1	×	○	○(~△)	×
Dispersibility test 1	△	△	△	△
Average of agglomerate size (μm)	45	7	9	29
Formability of oil-film	○	○	○	○
Formability of granulated particles	○	○	○	○

It is apparent from the results shown in Table 2 that the use of the acylated amino acids in the presence of an agricultural chemical compound of which a melting point is more than 70°C and a carrier did not contribute to improvement of the underwater disintegrability, suspensibility, and dispersibility of the samples 1 to 4.

#### CONCLUSION

Since the underwater disintegrability and the dispersibility were not improved even if the acylated amino acids was formulated together with an agricultural chemical compound of which a melting point is more than 70°C and a carrier, I believe that it would not have been obvious to a person of ordinary skill in the art to formulate an acylated amino acid

or derivatives thereof in an agricultural and horticultural water dispersible granule containing an agricultural chemical compound, of which a melting or softening point is 70° C or below, and of which the underwater disintegrability and the dispersibility are required to be improved to make an agricultural and horticultural water dispersible granule.

6. I understand fully the content of this declaration.

7. I, Yoshio Nakamura, the undersigned declarant further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements are made with the knowledge that willful false statements and the like so made are punishable by fines or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 30 day of July, 2008.

Yoshio Nakamura

(Yoshio Nakamura)